

**Claims**

What is claimed is:

1. A method comprising a step (a) of determining a location within a cycle by reading a portion of a cyclic bit sequence, the bit sequence containing several interspersed bit-group sets that each contain a plurality of series that each consist of several consecutively-placed identical bit-groups.
2. The method of claim 1 in which the determining step (a) includes steps of:
  - (a1) reading several servo fields from a data surface, each of the servo fields consisting of a respective one of the bit-groups, an analog portion and a digital remainder portion; and
  - (a2) deriving a sector number from the bit-groups and not from the digital remainder portions, the sector number being the determined location within the cycle.
3. The method of claim 1 further comprising a step (b) of accessing a sector having a sector number, the sector number being the determined location within the cycle.
4. The method of claim 1 in which the determining step (a) includes a step (a1) of writing each of the bit-groups as a mutually adjacent plurality of bits within a respective servo field.
5. The method of claim 1 in which the determining step (a) includes a step (a1) of selecting each of the sets so that each of the bit-groups in the set uniquely identifies the set.
6. The method of claim 1 in which the determining step (a) includes a step (a1) of writing several of the series consecutively and so that the series each consist of exactly S consecutively-placed bit-groups, where  $S > 3$ .

7. The method of claim 1 in which the determining step (a) includes a step (a1) of assembling a several data surfaces into a co-rotating assembly so that a pair of the data surfaces have a significant angular misalignment smaller than a predetermined threshold, at least one of the pair containing the cyclic bit sequence.

8. The method of claim 1 in which the determining step (a) includes steps of:

- (a1) assembling first and second disc surfaces into a co-rotating assembly so that the surfaces have a significant angular misalignment, the second disc containing the cyclic bit sequence;
- (a2) measuring a first position on the first disc or surface;
- (a3) reading the cyclic bit sequence portion from the second disc or surface; and
- (a4) determining the location based on a combination of the first position from the measuring step (a2) and the sequence portion from the reading step (a3).

9. The method of claim 1 in which the determining step (a) is completed within one disc revolution of activating a transducer that reads from the cyclic bit sequence.

10. The method of claim 1 in which the determining step (a) includes a step (a1) of writing each of the bit-groups within a few nominal bit-lengths of a respective track identifier.

11. The method of claim 1 in which the determining step (a) includes steps of:

- (a1) reading a bit pattern from a data surface containing the cyclic bit sequence;
- (a2) verifying that the bit pattern from the reading step (a1) is consistent with the bit sequence; and
- (a3) accepting the bit pattern as the read portion based on the verification step (a2).

12. The method of claim 1 in which the determining step (a) includes a step (a1) of mounting two data surfaces so as to generate a significant angular misalignment therebetween, each of the data surfaces containing the cyclic bit sequence.

13. The method of claim 1 in which the determining step (a) includes a step (a1) of detecting a plurality of inter-set transitions in the read portion of the bit sequence.

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14. A method comprising steps of:

- (a) writing many M-bit set labels each into a respective servo sector so as to define a cyclic bit sequence, where  $M > 1$ , the bit sequence containing several interspersed bit-group sets that each contain a plurality of series that each consist of  $2^N (=S)$  of the set labels, where  $N > 1$ , each of the series consisting of the set labels of each of several circumferentially consecutive ones of the servo sectors, all of the set labels within each of the sets being identical;
- 10 (b) assembling at least first and second discs onto a disc stack so that the discs are angularly aligned within  $\pm(2^{M+N}-1)*360/(W*2)$  degrees, the first disc having a data surface containing the cyclic bit sequence defined in the writing step (a);
- 15 (c) reading several servo fields from the data surface of the assembling step (b), each of the servo fields consisting of a digital portion and an analog portion, each of the digital portions consisting of a set label and a remainder portion;
- (d) activating a transducer that reads at least some of the bit-groups and detects an inter-set transition; and
- 20 (e) within one disc revolution of beginning the activating step (d), determining a current sector number on the data surface based on a combination of the inter-set transition and on a pre-switch position detected on the second disc, making this determination not based on the digital remainder portions.

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15. An apparatus comprising at least one rotatable element containing a cyclic bit sequence, the bit sequence containing several interspersed bit-group sets that each contain a plurality of series that each consist of several circumferentially consecutive identical bit-groups.

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16. The apparatus of claim 15 in which each of the bit-groups resides in a respective nominally-contiguous digital portion of a respective servo sector, each of the digital portions being bounded by two respective non-digital portions of the respective servo sector, each of the digital portions occupying a total area A, each of the bit-groups occupying a smaller area B that is at most about 15% of A.

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17. The apparatus of claim 15 in which the cyclic bit sequence resides on one annular data surface of the rotatable element, in which the data surface includes a multitude of servo sectors each containing one of the bit-groups, the servo sectors occupying a total area A, the bit-groups occupying a smaller area  $B < 2\%$  of A.

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18. The apparatus of claim 15 in which each of the bit-groups is a set-identifying label that identifies a respective one of the several sets.

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19. The apparatus of claim 18 in which each of the bit-groups resides in a respective nominally-contiguous digital portion of a respective servo sector, each of the digital portions being bounded by two respective non-digital portions of the respective servo sector, each of the digital portions occupying a total area A, each of the bit-groups occupying a smaller area B that is at most about 15% of A.

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20. The apparatus of claim 18 in which the cyclic bit sequence resides on one annular data surface of the rotatable element, in which the data surface includes a multitude of servo sectors each containing one of the bit-groups, the servo sectors occupying a total area A, the bit-groups occupying a smaller area  $B < 2\%$  of A.

21. The apparatus of claim 18, further comprising a controller configured to determine an angular location on the element by reading a plurality of the bit-groups.
- 5 22. The apparatus of claim 15, further comprising a controller configured to determine an angular location on the element by reading a plurality of the bit-groups.
- 10 23. The apparatus of claim 22 in which each of the bit-groups resides in a respective nominally-contiguous digital portion of a respective servo sector, each of the digital portions being bounded by two respective non-digital portions of the respective servo sector, each of the digital portions occupying a total area A, each of the bit-groups occupying a smaller area B that is at most about 15% of A.
- 15 24. The apparatus of claim 22 in which the cyclic bit sequence resides on one annular data surface of the rotatable element, in which the data surface includes a multitude of servo sectors each containing one of the bit-groups, the servo sectors occupying a total area A, the bit-groups occupying a smaller area  $B < 2\%$  of A.